

WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTERS

PATENT OF THE UNITED STATES IS:

1. An image processing apparatus for generating
5 graphics data according to picture description instructions
based on original image data of full color, comprising:
 - a chromatic tester configured to determine whether a
pixel of the original image data is chromatic or achromatic;
 - an obtainer configured to obtain an image property of
10 the pixel;
 - a color converter configured to convert the original
image data into CMYK data for printing according to a
predetermined converting condition; and
 - a converting condition designator configured to
15 designate a type of the predetermined converting condition
for the pixel determined as achromatic by said chromatic
tester according to the image property obtained by said
obtainer.
- 20 2. The image processing apparatus according to Claim 1,
wherein said chromatic tester determines the pixel as
achromatic when values of RGB color components are identical
to each other.
- 25 3. The image processing apparatus according to Claim 1,
wherein said chromatic tester determines the pixel as

achromatic when differences in data value among RGB components of the pixel fall within respective predetermined threshold values.

5 4. The image processing apparatus according to Claim 1,
wherein the predetermined condition used for the pixel
determined as achromatic is any one of a K monochrome
converting condition using a black color and a normal
converting condition using cyan, magenta, yellow, and black
10 colors.

15 5. The image forming apparatus according to Claim 1,
wherein said obtainer checks pixels in a predetermined area
in the original image data to obtain the image property of
the pixel.

20 6. The image forming apparatus according to Claim 1,
wherein the image property of the pixel is either one of a
first image property of including any chromatic pixel in the
pixels in the predetermined area and a second property of not
including any chromatic pixel in the pixels in the
predetermined area, and said converting condition designator
designates the K monochrome converting condition to the pixel
having the first image property.

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7. The image forming apparatus according to Claim 1,

wherein the predetermined area comprises a predetermined number of sequential pixels immediately preceding the pixel in a main scanning direction.

5 8. The image forming apparatus according to Claim 1,
wherein the predetermined area comprises a predetermined number of sequential pixels immediately succeeding the pixel in a main scanning direction.

10 9. The image forming apparatus according to Claim 1,
wherein the predetermined area comprises a predetermined number of sequential pixels immediately preceding and succeeding the pixel in a main scanning direction.

15 10. The image forming apparatus according to Claim 1,
wherein the predetermined area is formed with an m-by-n matrix surrounding the pixel, m and n being positive integer values greater than zero.

20 11. An image processing apparatus for generating graphics data according to picture description instructions based on original image data of full color, comprising:
chromatic checking means for checking to determine whether a pixel of the original image data is chromatic or
25 achromatic;
obtaining means for obtaining an image property of the

pixel;
color converting means for converting the original
image data into CMYK data for printing according to a
predetermined converting condition; and
5 converting condition designating means for designating
a type of the predetermined converting condition for the
pixel determined as achromatic by said chromatic checking
means according to the image property obtained by said
obtaining means.

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12. The image processing apparatus according to Claim
11, wherein said chromatic checking means determines the
pixel as achromatic when values of RGB color components are
identical to each other.

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13. The image processing apparatus according to Claim
11, wherein said chromatic checking means determines the
pixel as achromatic when differences in data value among RGB
components of the pixel fall within respective predetermined
20 threshold values.

14. The image processing apparatus according to Claim
11, wherein the predetermined condition applied to the pixel
determined as achromatic is any one of a K monochrome
25 converting condition using a black color and a normal
converting condition using cyan, magenta, yellow, and black

colors.

15. The image forming apparatus according to Claim 11,
wherein said obtaining means checks pixels in a predetermined
5 area in the original image data to obtain the image property
of the pixel.

16. The image forming apparatus according to Claim 11,
wherein the image property of the pixel is either one of a
10 first image property of including any chromatic pixel in the
pixels in the predetermined area and a second property of not
including any chromatic pixel in the pixels in the
predetermined area, and said converting condition designating
means designates the K monochrome converting condition to the
15 pixel having the first image property.

17. The image forming apparatus according to Claim 11,
wherein the predetermined area comprises a predetermined
number of sequential pixels immediately preceding the pixel
20 in a main scanning direction.

18. The image forming apparatus according to Claim 11,
wherein in the predetermined area comprises a predetermined
number of sequential pixels immediately succeeding the pixel
25 in a main scanning direction.

19. The image forming apparatus according to Claim 11,
wherein the predetermined area comprises a predetermined
number of sequential pixels immediately preceding and
succeeding the pixel in a main scanning direction.

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20. The image forming apparatus according to Claim 11,
wherein the predetermined area is formed with an m-by-n
matrix surrounding the pixel, m and n being positive integer
values greater than zero.

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21. A graphics data processing method for generating
graphics data according to picture description instructions
based on original image data of full color, the graphics data
processing method comprising the steps of:

15 determining whether a pixel of the original image data
is chromatic or achromatic;

obtaining an image property of the pixel;

designating a type of a predetermined converting

condition for the pixel determined as achromatic by said

20 determining step according to the image property obtained in
said obtaining step; and

converting the original image data into CMYK data
according to the predetermined converting condition.

25 22. The graphics data processing method according to
Claim 21, wherein said chromatic checking step determines the

pixel as achromatic when values of RGB color components are identical to each other.

23. The graphics data processing method according to
5 Claim 21, wherein said chromatic checking step determines the pixel as achromatic when differences in data value among RGB components of the pixel fall within respective predetermined threshold values.

10 24. The graphics data processing method according to
Claim 21, wherein the predetermined condition applied to the pixel determined as achromatic is any one of a K monochrome converting condition using a black color and a normal converting condition using cyan, magenta, yellow, and black
15 colors.

25. The graphics data processing method according to
Claim 21, wherein said obtaining step checks pixels in a predetermined area in the original image data to obtain the
20 image property of the pixel.

26. The graphics data processing method according to
Claim 21, wherein the image property of the pixel is either one of a first image property of including any chromatic
25 pixel in the pixels in the predetermined area and a second property of not including any chromatic pixel in the pixels

in the predetermined area, and said designating step designates the K monochrome converting condition to the pixel having the first image property.

5 27. The graphics data processing method according to Claim 21, wherein the predetermined area comprises a predetermined number of sequential pixels immediately preceding the pixel in a main scanning direction.

10 28. The graphics data processing method according to Claim 21, wherein the predetermined area comprises a predetermined number of sequential pixels immediately succeeding the pixel in a main scanning direction.

15 29. The graphics data processing method according to Claim 21, wherein the predetermined area comprises a predetermined number of sequential pixels immediately preceding and succeeding the pixel in a main scanning direction.

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 30. The graphics data processing method according to Claim 21, wherein the predetermined area is formed with an m-by-n matrix surrounding the pixel, m and n being positive integer values greater than zero.

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 31. A computer program product stored on a computer

readable storage medium for causing a computer to carry out an image processing method, when run on an image processing apparatus, said method comprising the steps of:

chromatic checking to determine whether a pixel of the

5 original image data is chromatic or achromatic;

obtaining an image property of the pixel;

designating a type of a predetermined converting condition for the pixel determined as achromatic in said chromatic checking step according to the image property

10 obtained in said obtaining step; and

converting the original image data into CMYK data for printing according to the predetermined converting condition.

32. The product according to claim 31, wherein said

15 chromatic checking step determines the pixel as achromatic when values of RGB color components are identical to each other.

33. The product according to claim 31, wherein said

20 chromatic checking step determines the pixel as achromatic when differences in data value among RGB components of the pixel fall within respective predetermined threshold values.

34. The product according to claim 31, wherein the

25 predetermined condition applied to the pixel determined as achromatic is any one of a K monochrome converting condition

using a black color and a normal converting condition using cyan, magenta, yellow, and black colors.

35. The product according to claim 31, wherein said
5 obtaining step checks pixels in a predetermined area in the
original image data to obtain the image property of the pixel.

36. The product according to claim 31, wherein the
image property of the pixel is either one of a first image
10 property of including any chromatic pixel in the pixels in
the predetermined area and a second property of not including
any chromatic pixel in the pixels in the predetermined area,
and said designating step designates the K monochrome
converting condition to the pixel having the first image
15 property.

37. The product according to claim 31, wherein the
predetermined area comprises a predetermined number of
sequential pixels immediately preceding the pixel in a main
20 scanning direction.

38. The product according to claim 31, wherein the
predetermined area comprises a predetermined number of
sequential pixels immediately succeeding the pixel in a main
25 scanning direction.

39. The product according to claim 31, wherein the predetermined area comprises a predetermined number of sequential pixels immediately preceding and succeeding the pixel in a main scanning direction.

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40. The product according to claim 31, wherein the predetermined area is formed with an m-by-n matrix surrounding the pixel, m and n being positive integer values greater than zero.

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41. A computer readable medium storing computer instructions for causing a computer to perform an image processing method, said method comprising:

chromatic checking to determine whether a pixel of the
15 original image data is chromatic or achromatic;

obtaining an image property of the pixel;

designating a type of a predetermined converting condition for the pixel determined as achromatic in said chromatic checking step according to the image property
20 obtained in said obtaining step; and

converting the original image data into CMYK data for printing according to the predetermined converting condition.

42. The storage medium according to claim 41, wherein
25 said chromatic checking step determines the pixel as achromatic when values of RGB color components are identical

to each other.

43. The storage medium according to claim 41, wherein
said chromatic checking step determines the pixel as
5 achromatic when differences in data value among RGB
components of the pixel fall within respective predetermined
threshold values.

44. The storage medium according to claim 41, wherein
10 the predetermined condition applied to the pixel determined
as achromatic is any one of a K monochrome converting
condition using a black color and a normal converting
condition using cyan, magenta, yellow, and black colors.

15 45. The storage medium according to claim 41, wherein
said obtaining step checks pixels in a predetermined area in
the original image data to obtain the image property of the
pixel.

20 46. The storage medium according to claim 41, wherein
the image property of the pixel is either one of a first
image property of including any chromatic pixel in the pixels
in the predetermined area and a second property of not
including any chromatic pixel in the pixels in the
25 predetermined area, and said designating step designates the
K monochrome converting condition to the pixel having the

first image property.

47. The storage medium according to claim 41, wherein
the predetermined area comprises a predetermined number of
5 sequential pixels immediately preceding the pixel in a main
scanning direction.

48. The storage medium according to claim 41, wherein
the predetermined area comprises a predetermined number of
10 sequential pixels immediately succeeding the pixel in a main
scanning direction.

49. The storage medium according to claim 41, wherein
the predetermined area comprises a predetermined number of
15 sequential pixels immediately preceding and succeeding the
pixel in a main scanning direction.

50. The storage medium according to claim 41, wherein
the predetermined area is formed with an m-by-n matrix
20 surrounding the pixel, m and n being positive integer values
greater than zero.

51. A printing apparatus comprising:
a printer engine; and
25 a printer controller storing a computer program product
for carrying out an image processing method, the method

comprising the steps of:

chromatic checking to determine whether a pixel
of the original image data is chromatic or achromatic;

obtaining an image property of the pixel;

5 designating a type of a predetermined converting
condition for the pixel determined as achromatic in said
chromatic checking step according to the image property
obtained in said obtaining step; and

converting the original image data into CMYK data

10 for printing according to the predetermined converting
condition.

52. A hosting apparatus comprising:

a computer; and

15 a printer driver installed in said computer and storing
a computer program product for carrying out an image
processing method, the method comprising the steps of:

chromatic checking to determine whether a pixel
of the original image data is chromatic or achromatic;

20 obtaining an image property of the pixel;

designating a type of a predetermined converting
condition for the pixel determined as achromatic in said
chromatic checking step according to the image property
obtained in said obtaining step; and

25 converting the original image data into CMYK data
for printing according to the predetermined converting

condition.